IN THE CLAIMS

Please amend the claim as follows:

1. (Currently Amended) An Ethernet-PON (Passive Optical Network) for integrating broadcast and communication based on a TDM (Time Division Multiplexing) scheme, comprising:

an OLT (Optical Line Terminal) ~~for~~ configured ~~performing~~ (i) to perform a switching operation on a plurality of digital broadcast/image data received from an external broadcast provider according to respective broadcast/image selection information transmitted from users, (ii) to perform a time division multiplexing on the digital broadcast/image data to convert ~~it~~ the digital broadcast/image data into a broadcast/image signal, (iii) to perform a frame-multiplexing on the broadcast/image signal and communication data received through an IP (Internet Protocol) network into a single frame, ~~and~~ (iv) to electro-optically convert~~ing~~ the single frame, and (v) to transmit~~ting~~ the ~~frame~~ electro-optically converted signal;

a plurality of ONTs (Optical Network Terminals), each ONT adapted ~~for~~ to receive~~ing~~ an optical signal from the OLT, the ONT configured ~~and for~~ to photoelectrically convert~~ing~~ the received optical signal, to perform~~ing~~ a frame & time-slot demultiplexing on the photoelectriaclly converted signal, to output ~~entire received~~ the communication ~~signals~~ data and the selected broadcast/image ~~information~~ data included in ~~a time slot assigned to the ONT~~ the photoelectriaclly converted signal to a corresponding user, and to receive~~ing~~ a communication signal and the broadcast/image selection information from one of the users to output them to the OLT; and

an optical splitter arranged in a path between the OLT and the plurality of ONTs, said optical splitter splitting a signal from the OLT into the plurality of ONTs, coupling signals from

the plurality of ONTs, and transmitting the coupled signal to the OLT.

2. (Currently Amended) The Ethernet-PON according to claim 1, wherein the OLT includes:

a broadcast/image channel selection switch ~~for~~ configured to receive~~ing~~ and switching external MPEG (Motion Picture Experts Group) broadcast and image data,

a broadcast/image time-slot multiplexer ~~for~~ configured to assign~~ing~~ broadcast/image channels, output from the broadcast/image channel selection switch, to a time-slots assigned ~~respectively~~ to ~~the~~ each users so as to multiplex the channels;

an Ethernet-PON OLT function processor ~~for~~ configured to perform~~ing~~ Ethernet-PON OLT functions;

an IP router ~~for~~ configured to route~~ing~~ a communication signal to an upper level IP network or to the Ethernet-PON OLT function processor;

an Ethernet time-slot matching buffer ~~for~~ configured to store~~ing~~ the communication data from the Ethernet-PON OLT function processor that is transmitted to the OLT ~~for matching/coupling to the time-slot multiplexed broadcast/image signal output from the time-slot multiplexer~~ and to prepare the communication data to be frame multiplexed;

a frame multiplexer ~~for~~ configured to multiplex~~ing~~ the time-slot-multiplexed broadcast/image signal from the broadcast/image time-slot multiplexer and the communication signal stored in the Ethernet time-slot matching buffer into a single frame;

a first optical transmitter ~~for~~ configured to optically modulate~~ing~~ a frame-multiplexed signal outputted from the frame multiplexer, and transmitting the modulated signal as an optical signal of λ_{DOWN}; and

a first optical receiver ~~for~~ configured to receive~~ing~~ an optical signal from the ONTs and

converting the optical signal into an electrical signal.

3. (Currently Amended) The Ethernet-PON according to claim 1, wherein each of the plurality of ONTs includes:

a second optical receiver ~~for~~ configured to receive~~ing~~ the signal transmitted as the optical signal of λ_{DOWN} from the OLT, and photoelectrically converting the optical signal;

a second optical transmitter ~~for~~ configured to electro-optically convert~~ing~~ upstream data and transmitting the upstream data to the OLT;

a frame/time-slot demultiplexer ~~for~~ configured to separate~~ing~~ the frame/time-slot-multiplexed broadcast/image and communication signals;

an Ethernet-PON ONT function processor ~~for~~ configured to receive~~ing~~ the communication signal from the frame/time-slot demultiplexer~~,~~ and to perform~~ing~~ ONT functions ~~on the function processor~~; and

a broadcast/image adapter ~~for~~ configured to recover~~ing~~ a time-slot-format broadcast/image signal, separated by the frame/time-slot demultiplexer, into an original signal.

4. (Currently Amended) The Ethernet-PON according to claim 2, wherein each of the plurality of ONTs includes:

a second optical receiver ~~for~~ configured to receive~~ing~~ the signal transmitted as the optical signal of λ_{DOWN} from the OLT, and photoelectrically converting the optical signal;

a second optical transmitter ~~for~~ configured to electro-optically convert~~ing~~ upstream data and transmitting the upstream data to the OLT;

a frame/time-slot demultiplexer ~~for~~ configured to separate~~ing~~ the frame/time-slot-multiplexed broadcast/image and communication signals;

an Ethernet-PON ONT function processor ~~for~~ configured to receive~~ing~~ the communication signal from the frame/time-slot demultiplexer~~,~~ and to perform~~ing~~ ONT functions ~~on the function processor~~; and

a broadcast/image adapter ~~for~~ configured to recover~~ing~~ a time-slot-format broadcast/image signal, separated by the frame/time-slot demultiplexer, into an original signal.

5. (Currently Amended) The Ethernet-PON according to claim 1, wherein the single frame obtained by multiplexing the broadcast/image signal and the communication signal is divided into a predetermined number of time-slots, and each of the time-slots includes a broadcast/image sub-time-slot ~~for~~ containing a broadcast/image signal and an Ethernet sub-time-slot ~~for~~ containing a communication signal.

6. (Currently Amended) The Ethernet-PON according to claim 2, wherein the single frame obtained by multiplexing the broadcast/image signal and the communication signal is divided into a predetermined number of time-slots, and each of the time-slots includes a broadcast/image sub-time-slot ~~for~~ containing a broadcast/image signal and an Ethernet sub-time-slot ~~for~~ containing a communication signal.

7. (Currently Amended) The Ethernet-PON according to claim 6, wherein the broadcast/image sub-time-slot contains a broadcast/image signal selected by one of the ONTs corresponding to said time-slot's order, and said time-slot being ~~is~~ left empty ~~or filled with null data~~ if there is no broadcast/image signal selected by the ONT.

8. (Currently Amended) The Ethernet-PON according to claim 6, wherein the Ethernet sub-time-slot ~~may~~ contains communication data of every ONT.

9. (Currently Amended) The Ethernet-PON according to claim 1, wherein the single frame obtained by multiplexing the broadcast/image signal and the communication signal is divided into a sub-frame for broadcast/image signals and a sub-frame for Ethernet communication signals, ~~and~~ the sub-frame for broadcast/image signals includesing broadcast/image time-slots~~, respectively, for~~ that containing broadcast/image signals of the ONTs.

10. (Currently Amended) The Ethernet-PON according to claim 2, wherein the single frame obtained by multiplexing the broadcast/image signal and the communication signal is divided into a sub-frame for broadcast/image signals and a sub-frame for Ethernet communication signals, ~~and~~ the sub-frame for broadcast/image signals includinges broadcast/image time-slots~~, respectively, for~~ that containing broadcast/image signals of the ONTs.

11. (Currently Amended) The Ethernet-PON according to claim 9, wherein the broadcast/image time-slot contains a broadcast/image signal selected by one of the ONTs corresponding to said time-slot's order, ~~and~~ said time-slot ~~is~~ being left empty ~~or filled with null data~~ if there is no broadcast/image signal selected by the ONT.

12. (Currently Amended) The Ethernet-PON according to claim 9, wherein the sub-frame for Ethernet communication signals ~~may~~ contains communication data of every ONT.

13. (Currently Amended) An Ethernet-PON for integrating broadcast and communication based on a TDM scheme, comprising:

an OLT ~~for~~ configured (i) to perform~~ing~~ ~~(i)~~ a switching operation on a plurality of digital broadcast/image data received from an external broadcast provider according to ~~respective~~ broadcast/image selection information transmitted from users[[,]]; (ii) to perform~~ing~~ a time division multiplexing on the digital broadcast/image data to convert ~~it~~ the digital broadcast/image data into a broadcast/image signal[[,]]; (iii) to electro-optically convert~~ing~~ the broadcast/image signal into a broadcast/image optical signal of λ_B[[,]]; (iv) to electro-optically convert~~ing~~ communication data received ~~through~~ from an IP network into a communication optical signal of λ_{DOWN}[[,]]; ~~(iv)~~ (v) to couple~~ing~~ the broadcast/image optical signal of λ_B and the communication optical signal of λ_{DOWN} into a single optical signal[[,]]; and (vi) to transmit~~ting~~ the single optical signal;

a plurality of ONTs, each ONT configured to receive~~ing~~ an optical signal from the OLT[[,]]; to separate~~ing~~ the received optical signal into the broadcast/image optical signal of λ_B and the communication optical signal of λ_{DOWN}[[,]]; to photoelectrically convert~~ing~~ the two separated signals[[,]]; to perform~~ing~~ time division demultiplexing on the photoelectrically converted broadcast/image signal to convert ~~it~~ the photoelectrically converted broadcast/image signal into the broadcast/image ~~information~~ data[[,]]; to output~~ting~~ the broadcast/image ~~information~~ data and the photoelectrically converted communication signal to a corresponding user[[,]]; and to receive~~ing~~ a communication signal and the broadcast/image selection information from the user to output them to the OLT; and

an optical splitter ~~for~~ configured to split~~ting~~ a signal from the OLT into the plurality of ONTs, coupling signals from the plurality of ONTs, and transmitting the coupled signal to the

OLT.

14. (Currently Amended) The Ethernet-PON according to claim 13, wherein the OLT includes:

a broadcast/image channel selection switch ~~for~~ configured to receive~~ing~~, to switch~~ing~~ and to output~~ting~~ an external MPEG broadcast and image data;

a time division multiplexer ~~for~~ configured to assign~~ing~~ broadcast/image channels output from the broadcast/image channel selection switch to time-slots assigned respectively to the users, so as to multiplex the channels in a TDM scheme;

a first optical transmitter ~~for~~ configured to optically modulate~~ing~~ the time-division-multiplexed broadcast/image signal;

an Ethernet-PON OLT function processor ~~for~~ configured to perform~~ing~~ Ethernet-PON OLT functions;

an IP router ~~for~~ configured to route~~ing~~ communication data to an upper level IP network or to the Ethernet-PON OLT function processor;

a second optical transmitter ~~for~~ configured to optically modulate~~ing~~ communication data to be transmitted to the plurality of ONTs;

a first optical receiver ~~for~~ configured to receive~~ing~~ an optical signal from the plurality of ONTs, converting the optical signal into an electrical signal, and transferring the converted signal to the Ethernet-PON OLT function processor;

a broadcast/image channel selection controller ~~for~~ configured to receive~~ing~~ the broadcast/image selection information from the plurality of ONTs through the Ethernet-PON OLT function processor, and transferring a control signal to the broadcast/image channel selection switch to allow the broadcast/image channel selection switch to select broadcast/image

channels corresponding respectively to the plurality of ONTs; and

a first WDM coupler ~~for~~ configured to coupl~~eing~~ the optically modulated communication signal of λ_{DOWN} and the optically modulated broadcast/image signal of λ_B, and to output the coupled signal.

15. (Currently Amended) The Ethernet-PON according to claim 13, wherein each of the plurality of ONTs includes:

a second WDM coupler ~~for~~ configured to separat~~eing~~ an optical signal received from the OLT into a communication signal of λ_{DOWN} and a broadcast/image signal of λ_B;

a second optical receiver ~~for~~ configured to receiv~~eing~~ the separated communication signal of λ_{DOWN}, and converting the communication signal into an electrical signal;

a third optical receiver ~~for~~ configured to receiv~~eing~~ the separated broadcast/image signal of λ_B, and converting the separated broadcast/image signal into an electrical signal;

an Ethernet-PON ONT function processor, connected to the second optical receiver, ~~for~~ configured to perform~~ing~~ ONT functions;

a third optical transmitter ~~for~~ configured to receiv~~eing~~ broadcast/image selection information and a communication signal to be transmitted to the OLT from a corresponding user through the Ethernet-PON ONT function processor, and transmitting them as an optical signal λ_{UP}; and

a time division demultiplexer & broadcast/image adapter ~~for~~ configured to receiv~~eing~~ the broadcast/image signal converted into the electrical signal, performing time division demultiplexing on the received signal, and recovering a time-slot-format broadcast/image signal, obtained through the time division demultiplexing, into an original signal.

16. (Currently Amended) The Ethernet-PON according to claim 13, wherein the time-division-multiplexed broadcast/image signal includes time-slots for broadcast/image signals corresponding respectively to the plurality of ONTs, ~~and~~ each of the time-slots includ~~e~~sing a predetermined number of sub-time-slots for accommodating the same predetermined number of broadcast/image signals.

17. (Currently Amended) The Ethernet-PON according to claim 14, wherein the time-division-multiplexed broadcast/image signal includes time-slots for broadcast/image signals corresponding respectively to the plurality of ONTs, ~~and~~ each of the time-slots includinge~~s~~ a predetermined number of sub-time-slots for accommodating the same predetermined number of broadcast/image signals.

18. (New) The Ethernet-PON according to claim 6, wherein the broadcast/image time-slot contains a broadcast/image signal selected by one of the ONTs corresponding to said time-slot's order, said time-slot being filled with null data if there is no broadcast/image signal selected by the ONT.

19. (New) The Ethernet-PON according to claim 9, wherein the broadcast/image sub-time-slot contains a broadcast/image signal selected by one of the ONTs corresponding to said time-slot's order, and said time-slot being filled with null data if there is no broadcast/image signal selected by the ONT.

20. (New) The Ethernet-PON according to claim 1, wherein the switching operation, which the OLT is configured to perform, comprises selecting a broadcast/image data channels from a plurality of broadcast/image channels, which received from an external broadcast provider, according to the broadcast/image selection information transmitted from each user.

21. (New) The Ethernet-PON according to claim 13, wherein the switching operation, which the OLT is configured to perform, comprises selecting a broadcast/image data channels from a plurality of broadcast/image channels, which received from an external broadcast provider, according to the broadcast/image selection information transmitted from each user.